


The synthesis of thymine-capped PAMAM dendrimers

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Highly efficient and tumor-selective nanoparticles for dual-targeted immunogene therapy against cancer

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Detailed protocol

Synthesis of thymine-capped dendrimers

The (bromobutyl)thymine (denoted as the thymine-(CH₂)₄-Br) was first prepared according to a previous report. Upon mixing thymine-(CH₂)₄-Br with different equivalents of with G4NH₂ (Aldrich, 87.4 μL, 5 μmol, 10 wt% methanol solution) in deionized water (400 μL), dendrimers with three levels of thymine coverage were successfully synthesized by microwaving the relevant mixture at 300W and 120°C for 10 min (CEM, Discover LabMate System). For each synthesis, the resulting crude mixture was extracted by dichloromethane to remove excess thymine-(CH₂)₄-Br, and the compound was freeze-dried from the aqueous solution.

Ref: J. S. Nowick, J. S. Chen and G. Noronha, *J. Am. Chem. Soc.*, 1993, **115**, 7636-7644.

How to cite: (Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used)

1. Lin, S. and Chen, Y. (2021). The synthesis of thymine-capped PAMAM dendrimers. Bio-protocol Preprint. bio-protocol.org/prep1450.
2. Huang, K., Hsu, F., Qiu, J. T., Chern, G., Lee, Y., Chang, C., Huang, Y., Sung, Y., Chiang, C., Huang, R., Lin, C., Dinh, T. K., Huang, H., Shih, Y., Alson, D., Lin, C., Lin, Y., Chang, P., Lin, S. and Chen, Y. (2020). Highly efficient and tumor-selective nanoparticles for dual-targeted immunogene therapy against cancer. Science Advances 6(3). DOI: [10.1126/sciadv.aax5032](https://doi.org/10.1126/sciadv.aax5032)

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